Amendments to the Specification:

After the title and before the first paragraph, please insert the following paragraph:

THIS APPLICATION IS A U.S. NATIONAL PHASE APPLICATION OF PCT INTERNATIONAL APPLICATION PCT/JP2003/007600.

Please replace the paragraph, beginning at page 1, line 14, with the following rewritten paragraph:

Figs. 42A and B show a structure of a conventional PTC heating element. The conventional PTC heating element includes a pair of comb-like electrodes (hereinafter as electrodes) 201, 202 and PTC resistor (hereinafter as resistor) 203 at a position where electric power is supplied therefrom on substrate 200. Substrate 200 is composed of a material having no flexibility at all or poor in the flexibility such as ceramics, insulated metal plate or polyester film. Electrodes 201, 202 are obtained by printing and drying a conductive paste. Resistor 203 is obtained by printing and drying a PTC composition ink (hereinafter as PTC ink). Substrate 200 and cover material 204 made of the same material as that of the substrate 200 cover and protect electrodes 201, 202 and PTC 203. Fig. ~~41A~~ 42A shows resistor 203 and cover material 204 while being partially cut-away.

Please replace the paragraph, beginning at page 4, line 22, with the following rewritten paragraph:

Fig. 1B is a cross sectional view at position ~~X-Y~~1B-1B of the PTC heating element in Fig. 1A.

Please replace the paragraph, beginning at page 5, line 14, with the following rewritten paragraph:

Fig. 6B is a cross sectional view at position ~~X-Y~~6B-6B of the PTC heating element in Fig. 6A.

Please replace the paragraph, beginning at page 5, line 25, with the following rewritten paragraph:

Fig. 9B is a cross sectional view at position ~~X-Y~~9B-9B of the PTC heating element in Fig. 9A.

Please replace the paragraph, beginning at page 6, line 8, with the following rewritten paragraph:

Fig. 11B is a cross sectional view at position ~~X-Y~~11B-11B of the PTC heating element in Fig. 11A.

Please replace the paragraph, beginning at page 6, line 18, with the following rewritten paragraph:

Fig. 14B is a cross sectional view at position ~~X-Y~~14B-14B of the PTC heating element in Fig. 14A.

Please replace the paragraph, beginning at page 6, line 23, with the following rewritten paragraph:

Fig. 15B is a cross sectional view at position ~~X-Y~~15B-15B of the PTC heating element in Fig. 15A.

Please replace the paragraph, beginning at page 7, line 12, with the following rewritten paragraph:

Fig. 19B is a cross sectional view at position ~~X-Y~~19B-19B of the PTC heating element in Fig. 19A.

Please replace the paragraph, beginning at page 8, line 3, with the following rewritten paragraph:

Fig. 23B is a cross sectional view at position ~~X-Y~~23B-23B of the PTC heating element in Fig. 23A.

Please replace the paragraph, beginning at page 8, line 11, with the following rewritten paragraph:

Fig. 25B is a cross sectional view at position ~~X-Y~~25B-25B of the PTC heating element in Fig. 25A.

Please replace the paragraph, beginning at page 8, line 25, with the following rewritten paragraph:

Fig. 29B is a cross sectional view at position ~~X-Y~~29B-29B of the PTC heating element in Fig. 29A.

Please replace the paragraph, beginning at page 9, line 5, with the following rewritten paragraph:

Fig. 30B is a cross sectional view at position ~~X-Y~~30B-30B of the PTC heating element in Fig. 30A.

Please replace the paragraph, beginning at page 9, line 16, with the following rewritten paragraph:

Fig. 32B is a cross sectional view at position ~~X-Y~~32B-32B of the PTC heating element in Fig. 32A.

Please replace the paragraph, beginning at page 9, line 21, with the following rewritten paragraph:

Fig. 33B is a cross sectional view at position ~~X-Y~~33B-33B of the PTC heating element in Fig. 33A.

Please replace the paragraph, beginning at page 10, line 1, with the following rewritten paragraph:

Fig. 34B is a cross sectional view at position ~~X-Y~~34B-34B of the PTC heating element in Fig. 34A.

Please replace the paragraph, beginning at page 10, line 8, with the following rewritten paragraph:

Fig. 35B is a cross sectional view at position ~~X-Y~~35B-35B of the PTC heating element in Fig. 35A.

Please replace the paragraph, beginning at page 10, line 19, with the following rewritten paragraph:

Fig. 38B is a cross sectional view at position ~~X-Y~~38B-38B of the PTC heating element in Fig. 38A.

Please replace the paragraph, beginning at page 10, line 24, with the following rewritten paragraph:

Fig. 39B is a cross sectional view at position ~~X-Y~~39B-39B of the PTC heating element in Fig. 39A.

Please replace the paragraph, beginning at page 11, line 4, with the following rewritten paragraph:

Fig. 40B is a cross sectional view at position ~~X-Y~~40B-40B of the PTC heating element in Fig. 40A.

Please replace the paragraph, beginning at page 11, line 11, with the following rewritten paragraph:

Fig. 42B is a cross sectional view at position ~~X-Y~~42B-42B of the PTC heating element in Fig. 42A.

Please replace the paragraph, beginning at page 11, line 22, with the following rewritten paragraph:

Fig. 1A is a partially cut-away plan view showing a PTC heating element of this embodiment and Fig. 1B is a cross sectional view at position ~~X-Y~~1B-1B. Flexible substrate (hereinafter as substrate) 1 has a gas barrier property and waterproof property, in which a liquid such as an ink is impregnated. For example, it is constituted by bonding a polyurethane hot melting film to the surface of a polyester non-woven fabric including long fibers. Comb-shape electrodes (hereinafter as electrodes) 2 are obtained by screen printing and drying a conductive paste in which conductive particles such as silver or carbon black is dispersed in a resin solution. PTC resistor (hereinafter as resistor) 3 is obtained by screen printing and drying a PTC ink. Since both the conductive paste and the PTC ink contain a flexible resin binder, the printed matters formed after drying keep flexibility to some extent. Flexible cover material (hereinafter as cover material) 4 has a gas barrier property and waterproof property, covers entire substrate 1 to protect electrodes 2 and

resistor 3. Cover material 4 is constituted by bonding a polyester hot melting film to the surface of a polyester non-woven fabric including long fibers and bonded on the surface of the polyester hot melting film with substrate 1.

Please replace the paragraph, beginning at page 13, line 6, with the following rewritten paragraph:

With the constitution as described above, a portion of the material constituting electrodes 2 and ~~heating element~~resistor 3 is impregnated into substrate 1. The more improved a vibration durability of the PTC heating element is, the more the extent of impregnation is. The vibration durability is one of evaluation means for the flexibility as a car seat heater, for which a semi-spherical ball of 165 mm diameter assuming a man's knee is pressed downward by 50 mm repetitively from the surface of the car seat. It is required for this evaluation that the change of the resistance value is 10% or less even after 1,000,000 cycles of vibrations in view of practical use.

Please replace the paragraph, beginning at page 26, line 11, with the following rewritten paragraph:

Fig. 11A is a partially cut-away plan view showing a PTC heating element according to this embodiment and Fig. 11B is a cross sectional view at position ~~X-Y~~11B-11B. Flexible substrate (hereinafter as substrate) 1 is impregnated with a liquid such as an ink. For example, it is a polyester non-woven fabric including long fibers formed with openings 32. Resistors 3 are disposed not entirely but divisionally and opening 32 is formed between resistors 3. Openings 32 can be prepared by previously punching out substrate 1. Resistor 3 is not disposed in opening 32 and flexibility is provided to the PTC heating element with openings 32 being as a bent portion. When such a PTC heating element is applied to a seat, feeling of attachment upon sitting and flexibility are improved. By blowing of cold blow from openings 32 in combination with a Pertier device or the like, conformability is enhanced.

Please replace the paragraph, beginning at page 65, line 10, with the following rewritten paragraph:

Figs. 34A, B are, respectively, a partially cut-away plan view and a cross sectional view at position ~~X-Y~~34B-34B for a flexible PTC heating element according to a thirty-fourth exemplary embodiment. Flexible substrate (hereinafter as substrate) 102 has ink impermeability. Substrate 102 is formed by extruding film 104 consisting of a urethane resin (hereinafter as film) through a T-die and thermally fusing it simultaneously with fiber substrate (hereinafter as substrate) 103 including a non-woven fabric such as a spun lace or spun bond. The material for substrate 103 is polyester. A pair of comb electrodes (hereinafter as electrodes) 2 formed by printing and drying a conductive paste such as a silver paste are provided on the surface of film 104 of substrate 102. Each of electrodes 2 includes main electrode 2A and branch electrodes 2B and arranged such that the longitudinal direction of main electrode 2A is aligned with the roll take-up direction for substrate 103. PTC resistor (hereinafter as resistor) 3 is formed on branch electrodes 2B by printing and drying PTC ink. Flexible cover material (hereinafter as cover material) 116 covers electrodes 2 and resistor 3. Cover material 116 is formed by thermally fusing hot melting resin film (hereinafter as film) 114 and fiber substrate (hereinafter as substrate) 115 such as a knit having openings. Cover material 116 is thermally fused with electrodes 2, resistor 3 and film 104 of substrate 102 via film 114. That is, electrodes 2 and resistor 3 are completely covered at the periphery thereof. Since substrate 115 included in cover material 116 includes, for example, a knit having openings, its surface has unevenness. Accordingly, the surface of electrodes 2 and resistor 2 in contact with substrate 115 is transferred with unevenness of substrate 115 upon thermal fusion.

Please replace the paragraph, beginning at page 68, line 9, with the following rewritten paragraph:

Accordingly, by using the non-woven fabric or knit as substrate 103, 115, substrate 103, 115 function as an elongation control section in the longitudinal direction. They have a tensile strength to a certain extent in the roll take-up direction. Then, fiber substrates 103, ~~15~~115 are arranged with the roll take-up direction being as the longitudinal direction. With the constitution as described above, it is possible to make the elongation characteristic with that in the longitudinal direction of the natural leather. When film 104 is bonded with substrate 103, film 104 functions as an elongation control portion in the lateral direction. That

is, a non-woven fabric such as spun lace or a mesh-like non-woven fabric having openings is used for substrate 103. As film 104 is bonded, electrodes 2 and resistor 3 are formed and a cover material 116 is attached, the strength in the lateral direction increases gradually. With such a constitution, it is possible to make the elongation characteristic approximate to that of the natural leather in the lateral direction. That is, while the inherent elongation characteristic of substrate 103 in the longitudinal direction is utilized as it is, elongation in the lateral direction is restricted to some extent mainly by bonding film 104 and film 114.

Please replace the paragraph, beginning at page 72, line 11, with the following rewritten paragraph:

Figs. 35A, B are, respectively, a partially cut-away plan view and a cross sectional view at position ~~X-Y~~35B-35B showing a flexible PTC heating element according to a thirty-fifth exemplary embodiment. The PTC heating element of this embodiment has substrates 117, 118 instead of substrate 103, 115. Other constitutions are identical with those in the thirty-fourth exemplary embodiment. Substrate 117 is a fiber substrate including a non-woven fabric or a knit A with a load of 7.5 kgf or less for 5% lateral elongation and with a load of 7.5 kgf or more for 5% longitudinal elongation. Substrate 118 is a fiber substrate including a knit B with a load of 7.5 kgf or less for 5% elongation both in longitudinal and lateral directions and that has rhombic openings and elongating by deformation.

Please replace the paragraph, beginning at page 77, line 4, with the following rewritten paragraph:

Figs 38A, B are, respectively, a partially cut away plan view and a cross sectional view at a position ~~X-Y~~38B-38B showing a flexible PTC heating element according to a thirty-eighth exemplary embodiment. In this embodiment, mesh-like fiber substrate (hereinafter as substrate) 125 having openings joined with flexible resin film 104 at the back surface is used as a flexible substrate. Conductive paste and PTC ink are impregnated therein to form electrodes 2 and resistor 3 respectively. That is, this is a constitution similar with the seventeenth exemplary embodiment. In Figs. 38A, B, a flexible cover material is not shown.

Please replace the paragraph, beginning at page 78, line 1, with the following rewritten paragraph:

Figs. 39A, B are, respectively, a partially cut away plan view and a cross sectional view at a position ~~X-Y~~39B-39B showing a flexible PTC heating element according to a thirty-ninth exemplary embodiment. In this embodiment, film 104 is joined on fiber substrate (hereinafter as substrate) 129 having openings to constitute substrate 102, and electrodes 2 and resistor 3 are provided on film 104 of substrate 102. That is, the constitution materials for the flexible substrate in the thirty-eighth exemplary embodiment are used in an arrangement opposite to that described above.

Please replace the paragraph, beginning at page 81, line 23, with the following rewritten paragraph:

Figs. 40A, B are, respectively, a partially cut away plan view and a cross sectional view at position ~~X-Y~~40B-40B showing a flexible PTC heating element according to a fortieth exemplary embodiment. This embodiment has a constitution substantially identical with that in the thirty-fourth exemplary embodiment. In the thirty-fourth exemplary embodiment, electrodes 2, resistor 3 and concave/convex portion 113 formed on the surface in contact with substrate 115 function as the elongation deformation portion. In this embodiment, such an elongation deformation portion is not disposed but adhesive resin 141 is disposed between film 104, and electrode 2 or resistor 3. Alternatively, an adhesive resin may be incorporated in film 104. The adhesive resin includes the material as described in the thirty-fourth exemplary embodiment. Substrate 103 or substrate 115 functions as an elongation control portion. Substrate 103 and/or substrate 115 are constituted, for example, with a non-woven fabric or knit. This improves close adhesion between electrodes 2 or resistor 3, and substrate 102, and then vibration durability is improved, since excess elongation than necessary is not caused.

Please replace the paragraph, beginning at page 82, line 24, with the following rewritten paragraph:

Fig. 41 is a constitutional view for a seat device incorporated with a flexible PTC heating element in a ~~fortieth~~ forty-first exemplary embodiment of the present

invention. Flexible PTC heating element (hereinafter as heater) 158 is disposed between surface skin 156 and pad 155. In the warming operation during winter, when electric current is supplied to heater 158 to generate heat, the heat is conducted to surface skin 156 to warm surface skin 156. When surface skin 156 is warmed, a person sitting is also warmed by heat conduction and radiation.